

AMENDMENTS TO THE CLAIMS

Please make the following amendments to the claims:

1. (Currently Amended)      An apparatus for equalizing a discrete multi-tone (DMT) transmit spectrum, comprising:

        a DMT transmitter configured to generate a plurality of transmit DMT carrier tones and apply a gain to each transmit DMT carrier tone and combine the plurality of transmit DMT carrier tones into a ~~transmit~~ symbol and transmit the symbol;

~~an~~ a receive amplifier configured to detect the ~~transmit~~ transmitted symbol;

        a discrete Fourier transform (DFT) element configured to separate the detected ~~transmit~~ symbol into ~~the~~ a plurality of received carrier tones; and

        a gain adjustment element configured to adjust the gain applied to at least one ~~each~~ of the plurality of transmit DMT carrier tones based on a predefined transmit signal spectrum associated with the at least one carrier tone and on a power measurement of at least one of the received carrier tones.

2. (Currently Amended)      The apparatus of claim 1, wherein each transmit DMT carrier tone is independently adjusted.

3. (Currently Amended)      The apparatus of claim 1, wherein the gain adjustment element further comprises:

        logic configured to measure the power on each of the plurality of received carrier tones;

        and

        logic configured to provide a gain scalar for each of the plurality of transmit DMT carrier tones.

4. (Currently Amended) The apparatus of claim 1, wherein the receive amplifier monitors local line conditions.

5. (Currently Amended) The apparatus of claim 1, wherein the ~~transmit~~ symbol is generated prior to a start-up sequence.

6. (Currently Amended) The apparatus of claim 1, wherein the ~~transmit~~ symbol is generated after a start-up sequence.

7. (Currently Amended) The apparatus of claim 1, wherein each of the plurality of transmit DMT carrier tones is encoded into a circular signal space constellation.

8. (Currently Amended) The apparatus of claim 1, wherein each of the plurality of transmit DMT carrier tones is encoded into a square signal space constellation.

9. (Currently Amended) A method for equalizing a discrete multi-tone (DMT) transmit spectrum, the method comprising the steps of:  
generating a plurality of transmit DMT carrier tones;  
applying a gain to each transmit DMT carrier tone;  
combining the plurality of transmit DMT carrier tones into a ~~transmit~~ symbol;  
detecting the ~~transmit~~ transmitted symbol;  
separating the ~~transmit~~ transmitted symbol into ~~the~~ a plurality of received carrier tones;  
and

adjusting the gain applied to at least one each of the plurality of transmit DMT carrier tones based on a predefined transmit signal spectrum associated with the at least one carrier tone and on a power measurement of at least one of the received carrier tones.

10. (Currently Amended) The method of claim 9, wherein the adjusting step further comprises the steps of:

calculating a power level for each of the received tones;  
comparing the power level of each received tone with a predetermined power level; and  
adjusting the power level of each transmit DMT tone to match the predetermined power level.

11. (Original) The method of claim 9, wherein the adjusting step is performed using gain scalars.

12. (Original) The method of claim 9, further comprising the step of monitoring a communication line to detect impedance variations, where the adjusting step is responsive to the impedance variations.

13. (Currently Amended) The method of claim 9, further comprising the step of generating the ~~transmit~~ symbol prior to a start-up sequence.

14. (Currently Amended) The method of claim 10, further comprising the step of generating the ~~transmit~~ symbol after a start-up sequence.

15. (Currently Amended) The method of claim 9, further comprising the step of encoding each of the plurality of transmit DMT carrier tones into a circular signal space constellation.

16. (Currently Amended) The method of claim 9, further comprising the step of encoding each of the plurality of transmit DMT carrier tones into a square signal space constellation.

17. (Currently Amended) An apparatus for equalizing a discrete multi-tone (DMT) transmit spectrum, comprising:

- means for generating a plurality of transmit DMT carrier tones;
- means for applying a gain to each transmit DMT carrier tone;
- means for combining the plurality of transmit DMT carrier tones into a ~~transmit~~ symbol;
- means for detecting the ~~transmit~~ transmitted symbol;
- means for separating the transmit symbol into the plurality of carrier tones; and
- means for adjusting the gain applied to at least one each of the plurality of transmit DMT carrier tones based on a predefined transmit signal spectrum associated with the at least one carrier tone and on a power measurement of at least one of the received carrier tones.

18. (Currently Amended) The apparatus of claim 17, further comprising:

- means for calculating a power level for each of the received tones;
- means for comparing the power level of each received tone with a predetermined power level; and
- means for adjusting the power level of each transmit DMT tone to match the predetermined power level.

19. (Original) The apparatus of claim 17, wherein the adjusting means uses gain scalars.

20. (Original) The apparatus of claim 17, further comprising means for monitoring a communication line to detect impedance variations and where the adjusting means is responsive to the impedance variations.

21. (Currently Amended) The apparatus of claim 17, further comprising means for generating the ~~transmit~~ symbol prior to a start-up sequence.

22. (Currently Amended) The apparatus as defined in claim 17, further comprising means for generating the ~~transmit~~ symbol after a start-up sequence.

23. (Currently Amended) The apparatus of claim 17, further comprising means for encoding each of the plurality of transmit DMT carrier tones into a circular signal space constellation.

24. (Currently Amended) The apparatus of claim 17, further comprising means for encoding each of the plurality of transmit DMT carrier tones into a square signal space constellation.

25. (Currently Amended) An apparatus for equalizing a transmit spectrum of a digital subscriber line (DSL) communication device, comprising:

means for generating a ~~transmit~~ symbol;  
means for detecting the ~~transmit~~ transmitted symbol;  
means for separating the ~~transmit~~ detected symbol into a plurality of frequencies; and  
means for adjusting a power level associated with each of the plurality of frequencies based on a predefined transmit signal spectrum and on a power measurement of at least one of the plurality of frequencies.

26. (Original) The apparatus of claim 25, wherein the communication device is quadrature amplitude modulation (QAM) modulated single carrier.

27. (Original) The apparatus of claim 25, wherein the communication device is carrierless amplitude/phase (CAP) modulated single carrier.

28. (Original) The apparatus of claim 25, wherein the means for adjusting a power level associated with each of the plurality of frequencies based on a predefined transmit signal spectrum further comprises a finite impulse response filter.